

COASTAL CONSERVANCY

Staff Recommendation
December 4, 2014

SOUTHERN CALIFORNIA ABALONE AND KELP FOREST HABITAT RESTORATION PROJECT

Project No. 14-043-01
Project Manager: Evyan Borgnis

RECOMMENDED ACTION: Consideration and authorization to disburse up to \$17,152.50 to The Bay Foundation for the Southern California Abalone and Kelp Forest Habitat Restoration Project in Los Angeles County, California.

LOCATION: Palos Verdes Peninsula, Los Angeles County, California

PROGRAM CATEGORY: Resource Enhancement

EXHIBITS

Exhibit 1: [Project Location and Site Map](#)

Exhibit 2: [Project Photos](#)

Exhibit 3: [Project Letters](#)

RESOLUTION AND FINDINGS:

Staff recommends that the State Coastal Conservancy adopt the following resolution pursuant to Sections 31220 *et seq.* of the Public Resources Code:

“The State Coastal Conservancy hereby authorizes the disbursement of an amount not to exceed \$17,152.50 (seventeen thousand one hundred fifty two dollars and fifty cents) to The Bay Foundation to re-introduce and restore green abalone (*Haliotis fulgens*) populations off the coast of Palos Verdes Peninsula, Los Angeles County, to implement the Santa Monica Bay Restoration Plan approved by the Conservancy on August 2, 2001. Prior to the disbursement of any funds, the grantee shall submit for the review and approval of the Executive Officer of the Conservancy:

- a. A work program, budget, schedule, and the names of any contractors to be employed in carrying out the project.
- b. Evidence that all permits and approvals necessary to the completion of the project have been obtained.

Staff further recommends that the Conservancy adopt the following findings:

“Based on the accompanying staff report and attached exhibits, the State Coastal Conservancy hereby finds that:

1. The proposed authorization is consistent with Chapter 5.5 of Division 21 of the Public Resources Code (sections 31220 *et seq.*), regarding integrated coastal and marine resources protection.
2. The proposed project is consistent with the current Conservancy Project Selection Criteria and Guidelines.
3. The Bay Foundation is a nonprofit organization existing under section 501(c)(3) of the Internal Revenue Service, and whose purposes are consistent with Division 21 of the Public Resources Code.

PROJECT SUMMARY:

Staff recommends that the Conservancy authorize the disbursement of up to \$17,152.50 to The Bay Foundation, formerly known as the Santa Monica Bay Restoration Foundation, to re-introduce and restore green abalone (*Haliotis fulgens*) populations in Los Angeles County. The project is consistent with the Santa Monica Bay Restoration Plan, as discussed in the “Project History” section below.

The Southern California Abalone and Kelp Forest Habitat Restoration Project aims to restore a green abalone (*Haliotis fulgens*) population that – like all other species of abalone in southern California (*Haliotis sp.*) - has experienced massive population declines during the past few decades. The Project will test a potential spawning method for the wild green abalone as well as perform a site assessment and monitor potential sites for outplanting of larval and juvenile green abalones. Specifically, Conservancy funds will be used for spawning wild abalone in the field (“deck-spawning”) with the goal of producing abalone larvae for subsequent outplanting experiments. In these experiments, staff collects abalone from the wild using SCUBA, induce them to spawn, and cross any resulting gametes on the deck of a research vessel (Exhibit 2). Non-lethal tissue samples are taken from the adult abalone for genetic analysis, and then the adult abalone are returned to the wild. This work will be led by National Oceanic and Atmospheric Administration (NOAA) staff and performed under the authority of NOAA’s existing Scientific Collection Permit and Memorandum of Understanding with the California Department of Fish and Wildlife. Viable fertilized eggs resulting from deck spawning efforts will be transported to partner aquarium facilities to grow to veliger and juvenile stages, and then outplanted in the wild. Veliger is the planktonic larval stage of development that all abalone species undergo. This new method may be a better option than methods used in the past because collecting abalone from the wild and keeping them in aquaria as broodstock for the duration of their lifespan has so far proven to be expensive and ineffective as a spawning method.

Secondly, Conservancy funds will be used to perform a site assessment and monitor potential sites for outplanting green abalone. To ensure the highest possible chances of green abalone outplant survival, The Bay Foundation researchers must find suitable habitat for larval and juvenile outplanting. Green abalone prefer mixed boulder and cobble habitat with a presence of crustose coralline algae in addition to other indicator species (Exhibit 2). The experimental

design for outplanting includes twelve 2x2 meter sites that are spaced at least 30 meters apart, totaling 384 square meters of ocean floor habitat. It will require considerable diving effort to locate, geo-reference, and pre-monitor this amount of habitat. Coastal Conservancy funding will support this aspect of the project.

Abalone species once supported thriving commercial and recreational fisheries, and are functional components of the giant kelp forest ecosystem of southern California, a productive subtidal habitat that over 700 marine species inhabit. The productivity and stability of kelp forests are inextricably linked to the sustainability of many local commercial and recreational fisheries, recreation, tourism, and the local economy. In addition to the large scale decline of abalone species, southern California has lost approximately 75% of its kelp forests in areas of southern California since the 1960's, thus spawning research and restoration efforts to return the kelp forests to their historic expanse. Notably, The Bay Foundation, formerly known as The Santa Monica Bay Restoration Foundation, has led and supported numerous studies and ecological restoration efforts relating to the giant kelp communities of Santa Monica Bay for the past ten years.

The Bay Foundation will partner with Redondo Beach SEA Lab, Vantuna Research Group, NOAA, and others to spawn wild and captive green abalone, and outplant the resulting individuals in three areas off of Palos Verdes Peninsula.

The outcomes of this project will include an expanded population of green abalone in coastal Palos Verdes Peninsula in Los Angeles County, California. This project will provide habitat and ecosystem benefits far beyond the scope of the project, as the procedures and methods developed will likely be transferable to other abalone populations including the endangered white abalone (*Haliotis sorenseni*) and black abalone (*Haliotis cracherodii*). In addition, restored abalone populations have the potential to provide additional benefits to rocky reef communities, including re-colonization of new areas by outplanted abalone larvae and other life stages, and increasing the sustainability of restored kelp beds through abalone competition with sea urchin populations.

Site Description: Abalone will be outplanted to three restoration sites in waters that are publicly owned by the State of California, adjacent to Palos Verdes Peninsula in Los Angeles County. Activities to be conducted on the three restoration sites are regulated by the California Department of Fish and Wildlife, which has granted NOAA a Scientific Collection Permit and Memorandum of Understanding permitting the work. The sites are commonly named Honeymoon Cove, Underwater Arch Cove, and Marguerite Cove and are bordered by Lunada Bay to the North and Point Vicente to the South (Exhibit 1).

Project History: In 1988, the State of California and the United States Environmental Protection Agency (US EPA) established the Santa Monica Bay Restoration Project (SMBRP) as a National Estuary Program (NEP) under the provisions of Section 320 of the federal Clean Water Act. The NEP is designed to promote collaborative watershed-based partnerships in order to develop and implement a comprehensive conservation and management plan that addresses the range of environmental problems facing the estuary, while recognizing and balancing the needs of the local community.

As a NEP, the SMBRP is charged with producing and overseeing implementation of the Santa Monica Bay Restoration Plan for the Bay's long term recovery. In 1995, the Santa Monica Bay Restoration Plan was approved by the State of California and the US EPA. The Bay Plan includes specific actions focused on habitat conservation, enhancement and restoration, pollution prevention and treatment control, and assessment, education, and monitoring.

The SMBRP was later renamed as the Santa Monica Bay Restoration Commission, codified at California Public Resources Code Sections 30988-30988.3. Implementation of the Bay Plan is a primary mission of the Santa Monica Bay Restoration Commission. The Commission is authorized in statute to: "Request and receive federal, state, local, and private funds from any source and to expend those moneys for the restoration and enhancement of Santa Monica Bay and its watershed." The Bay Foundation is a nonprofit organization that supports the Santa Monica Bay Restoration Commission and works to implement goals of the Santa Monica Bay Restoration Plan.

The Southern California Abalone and Kelp Forest Habitat Restoration Project began in 2010 with a grant from The Nature Conservancy-National Oceanic and Atmospheric Administration Community Based Restoration Program grant. Since its inception, the project has produced two peer-reviewed scientific journal articles, and demonstrated restoration of 13 acres of kelp forest community. The collection, analysis and comparison of data pre and post restoration and of control and reference sites will continue to inform trends in the kelp forest community resulting from these efforts.

PROJECT FINANCING

Coastal Conservancy	\$17,152.50
TNC- NOAA Community Restoration Grant Program	\$84,962.23
Project Total	\$102,114.73

The anticipated source of Conservancy funds is a grant awarded to the Conservancy in 2010 from the NOAA Coastal and Marine Habitat Restoration National and Regional Partnership Grant Program. The NOAA Partnership Grant forms a three year partnership between a federal (NOAA) and regional (SCC) agency. This is the second NOAA Partnership Grant awarded to the Conservancy. In partnership with NOAA staff, SCC staff identifies projects from the California coast that support the restoration of NOAA trust resources. The funds from this Partnership program are dedicated to implementing qualified restoration projects that specifically protect and enhance NOAA trust resources. Program priorities for the Coastal and Marine Habitat Restoration National and Regional Partnership Grant Program primarily support NOAA's "Ecosystems" mission goal of "Protect, Restore, and Manage Use of Coastal and Ocean Resources through Ecosystem-Based management." According to the funding announcement, restoration includes "activities that contribute to the return of degraded or altered marine, estuarine, coastal and freshwater... fish habitats to a close approximation of their condition prior to disturbance" and are expected to have "strong on-the-ground habitat restoration components that provide educational and social benefits for communities, in addition to long-term ecological

habitat improvements for NOAA trust resources.” The Project will involve on-the-ground restoration of a native green abalone population, a NOAA trust resource. The restored abalone population will also provide ecosystem benefits to the kelp forest, another NOAA trust resource, by competing with sea urchins. The Project also involves an educational component; the Bay Foundation conducts outreach and education on a regular basis through several outlets. They have wild and captive green abalone at the Redondo Beach SEA Lab, an educational aquarium facility that hosts school and public visitors on a daily basis. Within this project’s timeline, they will also conduct equipment testing at the California Science Center where divers will outplant green abalone larvae into a holding tent within the Science Center’s 188,000 gallon kelp tank to test the project’s methods. Throughout the tank outplanting, Science Center staff will explain the process to visitors and educate them on green abalone and kelp forest ecosystem dynamics. Lastly, The Bay Foundation staff will present findings to various groups, including divers at the Aquarium of the Pacific, the Palos Verdes Junior Rangers, students from LMU and Occidental College, scientists at conferences, and the public at fairs and workshops. These funds are the last remaining funds of the second, three-year partnership between NOAA and the Conservancy.

CONSISTENCY WITH CONSERVANCY’S ENABLING LEGISLATION:

Chapter 5.5 of Division 21 of the Public Resources Code (Section 31220) provides for the Conservancy’s participation in a program of integrated coastal and marine resources protection.

Consistent with section 31220(a), in order to improve and protect coastal and marine water quality and habitats, the conservancy may award grants for living marine resources protection and restoration projects. Conservancy staff has consulted with the State Water Resources Control Board as required by this subsection.

Consistent with section 31220(b)(2), the proposed project will protect and restore fish and wildlife habitat within coastal and marine waters by restoring kelp forest habitat.

Consistent with section 31220(b)(3), the proposed project will reduce threats to coastal and marine fish and wildlife by creating a more robust green abalone population and kelp forest ecosystem.

Consistent with section 31220(c), the proposed project will include a monitoring and evaluation component by conducting pre-monitoring assessments of substrate composition and relief and species abundance and diversity before outplanting occurs. Following outplanting, the project team will evaluate veliger outplanting sites through the end of 2014, and evaluate juvenile outplanting sites through February 2015.

CONSISTENCY WITH CONSERVANCY’S 2013 STRATEGIC PLAN GOAL(S) & OBJECTIVE(S):

Consistent with **Goal 5, Objective 5B** of the Conservancy’s 2013-2018 Strategic Plan, the proposed project will restore coastal habitat and enhance biological diversity of the giant kelp forest ecosystems and green abalone populations in Southern California.

**CONSISTENCY WITH CONSERVANCY'S
PROJECT SELECTION CRITERIA & GUIDELINES:**

The proposed project is consistent with the Conservancy's Project Selection Criteria and Guidelines, last updated on October 2, 2014, in the following respects:

Required Criteria

1. **Promotion of the Conservancy's statutory programs and purposes:** See the "Consistency with Conservancy's Enabling Legislation" section above.
2. **Consistency with purposes of the funding source:** See the "Project Financing" section above.
3. **Support of the public:** The Bay Foundation is a broad based partnership that brings together local, state, and federal agencies, environmental groups, businesses, and members of the general public. The public is heavily involved in the proposed project, as much of the restoration work is done by volunteers supervised by project partners. LA Waterkeeper, a partner in the project, utilizes volunteers from the community to restore kelp forest habitat as part of the project. Outreach at aquaria, festivals, and other events has raised awareness and increased support for the project across southern California.
4. **Location:** The proposed project would be located within the coastal zone of Palos Verdes Peninsula, Los Angeles County.
5. **Need:** Funding from the Coastal Conservancy will allow an important part of the abalone restoration project to occur. Without this funding, the abalone deck spawning pilot project may not move forward.
6. **Greater-than-local interest:** The proposed project is of regional significance because restoration techniques used for green abalone populations in Southern California can be transferred to endangered white abalone populations throughout the California coast. Restoring kelp forest habitat also creates recreation and tourism opportunities in the state.
7. **Sea level rise vulnerability:** The proposed project will not be negatively affected by sea level rise because it is in a subtidal environment. The project may in fact mitigate the effects of sea level rise because kelp forest habitat may reduce the impact of wave and storm energy on shore.
8. **Promotion and implementation of state plans and policies:** The proposed project directly aligns with several state-wide conservation plans. In the California Department of Fish and Wildlife's California Wildlife Action Plan (currently being updated; last updated in 2007), the green abalone species is specifically listed as a species at risk and there is a distinct focus on the particularly striking decreases in southern California's abalone populations (pg. 380-381). As stated below, the California Abalone Recovery and Management Plan last updated in 2006 by the California Department of Fish and Wildlife, also includes the green abalone species as a species at risk and designates nine tasks to further the recovery of this species (section 6.6.2.3.). The Abalone Recovery and Management Plan also identifies the proposed project site, the Palos Verdes Peninsula, as a priority restoration site (pg. 6-24).

Additional Criteria

9. **Urgency:** The project is of great urgency because green abalone populations are declining and have fallen to an unsustainable level of reproduction.
10. **Leverage:** See the “Project Financing” section above.
11. **Innovation:** The proposed project will use innovative techniques for restoring and re-introducing abalone populations. See “Project Summary” section above.
12. **Readiness:** The proposed project has already begun and maintains a strict timeline based on previous grant requirements and dependent on seasonal spawning and development periods of green abalone.
13. **Cooperation:** The proposed project brings together several non-profit, community, state and federal agency partners including: LA Waterkeeper, Redondo SEA Lab, DFW, NOAA, TNC, and others.

CONSISTENCY WITH LOCAL WATERSHED MANAGEMENT PLAN

The proposed restoration project directly supports goals of the Santa Monica Bay Restoration Plan, last updated in 2013. Goal 9 of the Santa Monica Bay Restoration Plan is to “Restore rocky intertidal and subtidal habitats” and objective 9.3 is to “Re-introduce and restore an abalone population” in the waters of the Santa Monica Bay. The plan furthermore states that “re-introduction and re-population of abalone may not only be feasible but necessary to restore the local abalone population” and “repopulation of abalone will further help forest restoration efforts by providing competition for sea urchins”. The project has been approved by the Governing Board and the Watershed Advisory Council of The Bay Foundation.

The project also supports objectives of the Abalone Recovery and Management Plan published in 2005 by the Department of Fish and Wildlife which identifies the Palos Verdes Peninsula as a priority restoration site that historically supported a thriving abalone fishery.

COMPLIANCE WITH CEQA:

The proposed project is categorically exempt from review under the California Environmental Quality Act (CEQA). Pursuant to 14 Cal. Code of Regulations Section 15304(d), projects involving minor alterations in land, water, and vegetation on existing officially designated wildlife management areas or fish production facilities which result in improvement of habitat for fish and wildlife resources or greater fish production are categorically exempt. This abalone restoration project involves the re-introduction and restoration of a small green abalone community in Palos Verdes Peninsula in order to improve fish and wildlife resources. Staff will file a Notice of Exemption upon approval.